# TECHNICAL REVIEW DOCUMENT for OPERATING PERMIT 980PAL203

to be issued to:

Public Service Company of Colorado Alamosa Combustion Turbine Alamosa County Source ID 0030007

Prepared by Ashley L. Kendall September 11, 1998

## I. Purpose:

This document will establish the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered within the Operating Permit proposed for this site. It is designed for reference during review of the proposed permit by the EPA and during Public Comment. The conclusions made in this report are based on information provided in the original application submittal of September 2, 1998. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

# II. Source Description:

This source is classified as an electric generation facility which falls into the Standard Industrial Classification 4911. The facility uses two GE turbines (T001 and T002) that can each generate up to 20 megawatts of electric power. This source currently is only used intermittently for peaking or emergencies.

The facility is located near the town of Alamosa in Alamosa County within an area designated as attainment for all pollutants. This facility is within 100 km of a Class I area, The Great Sand Dunes and New Mexico borders are within 50 miles. The applicant certified that they are not subject to the provisions of the Section 112(r) of the Federal Clean Air Act. Based on the information provided, it is categorized as a major stationary source (potential to emit greater than 250 tpy) with respect to Prevention of Significant Deterioration (PSD). Future modifications at this facility resulting in a significant net emissions increase or a modification which is major by itself will result in the application of the PSD review requirements. Facility wide emissions are as follows:

<u>Pollutant</u>	Potential to Emit (tpy)	Actuals (tpy)
PM/PM10	108	1.01
NOx	1,232	10.76
VOC	47	0.54
CO	213	2.39
Lead	0.11	Neg.
SO2	891	0.31
HAPs	9.15	0.1

Potential emissions are based on maximum design rates for either natural gas or #2 fuel oil, whichever is greater. Actual emissions are based on 1997 data from the most recent APENs submitted with the application on September 2, 1998 (APENs dated 8/21/98).

#### III. Emission Sources:

The following sources are specifically regulated under terms and conditions of the Operating Permit for this Site:

<u>Unit S001</u> - One (1) GE Model 5000CT Combustion Turbine, Maximum Site Rated at 233 MMBtu/hr, Fueled by Natural Gas, #1 Fuel Oil, #2 Fuel Oil or Combination, SN: 226154.

#### Discussion:

**1. Applicable Requirements-** This turbine was installed and began operation in 1972. On October 1, 1975 a permit to operate was issued (P-10, 892) for this turbine with the following conditions:

Particulate emissions do not exceed 51 tons per year.

Although most 'P-' permits to operate expired in two years the terms of the permit are still in effect per §25 7 114. (K) C.R.S which states that any permit issued prior to June 20, 1979, with respect to a project or operation thereof shall continue in full force and effect...

**2. Emission Factors -** Emissions from these turbines are produced during the combustion process, and are dependent upon operating conditions and specific properties of the fuel being burned. The pollutants of concern are Nitrogen Oxides (NO<sub>X</sub>), Carbon Monoxide (CO), Volatile Organic Compounds (VOC), Sulfur Oxides (SO<sub>X</sub>), Particulate Matter (PM and PM<sub>10</sub>) and Lead. Small quantities of Hazardous Air Pollutants (HAPs) are also emitted dependent upon the makeup of the fuel and combustion efficiency. The Compliance Emission Factors used to calculate emission for the turbines are from AP-42, Section 3.1, Table 3.1-1 for Stationary Gas Turbines for Electric

Generation and are listed below.

<u>Pollutant</u>	Natural Gas (lb/MMBtu)	Fuel Oil (lb/MMBtu)
NOx	0.44	0.698
CO	0.11	0.048
VOC	0.024	0.017
SOx	0.94(S)*	1.01(S)**
PM/PM10	0.042	0.061

<sup>\*</sup> The max sulfur content for the natural gas is 0.01%.

**3. Monitoring Plan -** The source indicated in their application that they would record monthly fuel usage and fuel quality from the form submitted by the supplier (currently form PSC 150Z), monthly fuel usage report and fuel oil purchase records. Then natural gas and fuel oil use will be used to calculate particulate and sulfur dioxide emissions using AP-42 emission factors. The source would like to show compliance with the 51 tons per year particulate emission limit by staying within a specified operating range (see chart attached, 'Alamosa Combustion Turbines Unit #1 Particulate Emission Limit Operating Range). However, a rolling 12-month total of particulate emission calculations will be sufficient to demonstrate compliance. The sulfur content is guaranteed by the supplier. A change in supplier will require a new sulfur content guarantee. The source shall certify compliance annually and keep a copy of the guarantee for each supplier on site and made available upon request.

If fuel oil is burned EPA Reference Method 9 will be required as noted to demonstrate compliance with both the 20% and 30% opacity standards.

**4. Compliance Status -** Current APENs reporting criteria pollutants and HAPs are on file with the Division. The source certified to being in compliance with all applicable requirements. Therefore, this unit is currently considered to be in compliance with all applicable requirements.

<u>Unit S002</u> - One (1) GE Model 5000CT Combustion Turbine, Maximum Site Rated at 233 MMBtu/hr, Fueled by Natural Gas, #1 Fuel Oil, #2 Fuel Oil or Combination, SN: 245106.

#### Discussion:

**1. Applicable Requirements-** This turbine was installed and began operation in 1977. On July 27, 1977 a final approval permit (C-11,238) was issued for this turbine with the following conditions:

<sup>\*\*</sup> The max sulfur content for the fuel oil is 0.5%

Particulate emissions do not exceed 0.1 lb/MMBtu and opacity does not exceed 20%.

The particulate emission limit of 0.1 lb/MMBtu was calculated incorrectly from Reg. 1. The correct limit should be 0.12 lb/MMBtu based on a maximum site rating of 233 MMBtu/hr. Therefore, the 0.1 lb/MMBtu limit has been removed from the operating permit and a 0.12 lb/MMBtu limit will be included.

**2. Emission Factors -** Emissions from these turbines are produced during the combustion process, and are dependent upon operating conditions and specific properties of the fuel being burned. The pollutants of concern are Nitrogen Oxides (NO<sub>X</sub>), Carbon Monoxide (CO), Volatile Organic Compounds (VOC), Sulfur Oxides (SO<sub>X</sub>), Particulate Matter (PM and PM<sub>10</sub>) and Lead. Small quantities of Hazardous Air Pollutants (HAPs) are also emitted dependent upon the makeup of the fuel and combustion efficiency. The Compliance Emission Factors used to calculate emission for the turbines are from AP-42, Section 3.1, Table 3.1-1 for Stationary Gas Turbines for Electric Generation and are listed below.

<u>Pollutant</u>	Natural Gas (lb/MMBtu)	Fuel Oil (lb/MMBtu)
NOx	0.44	0.698
CO	0.11	0.048
VOC	0.024	0.017
SOx	0.94(S)*	1.01(S)**
PM/PM10	0.042	0.061

<sup>\*</sup> The max sulfur content for the natural gas is 0.01%.

- **3. Monitoring Plan -** The source indicated in their application that they would record monthly fuel usage and fuel quality from the form submitted by the supplier (currently form PSC 150Z), monthly fuel usage report and fuel oil purchase records. Then natural gas and fuel oil use will be converted to particulate and sulfur dioxide emissions using AP-42 emission factors. The sulfur content is guaranteed by the supplier. A change in supplier will require a new sulfur content guarantee. The source shall certify compliance annually and keep a copy of the guarantee for each supplier on site and made available upon request.
- **4. Compliance Status -** Current APENs reporting criteria pollutants and HAPs are on file with Division. The source certified to being in compliance with all applicable requirements. Therefore, this unit is currently considered to be in compliance with all applicable requirements.

<sup>\*\*</sup> The max sulfur content for the fuel oil is 0.5%.

Cleaners, Solvents (< APEN deminimis)

Office space heaters (< 10 MMBtu/hr)

Two (2) emergency fuel oil spill/overfill tanks (< 400,000 gallons annual throughput)

Fuel oil storage tank (<400,000 gallons annual throughput)

Gravel driveway (< APEN deminimis)

Two (2) Startup engines (< 5 tons/yr actual emissions)

## V. Alternative Operating Scenarios

No alternative operating scenarios were requested.

### VI. Permit Shield

Regulation No.7 (except Section V) - Standards do not apply because facility is in an ozone attainment area, there are no gasoline storage tanks and the storage tanks at the facility only store #1 and #2 fuel oil.

40 CFR 52.21, Prevention of Significant Deterioration (Colorado Regulation 3, Part B, Section IV.D.3) - Standard does not apply because no construction or modification of the facility have occurred since August 7, 1977. However, future modifications at this facility could trigger PSD requirements.

40 CFR 60, Subpart GG (as incorporated by reference in Regulation No. 6, Part A, Subpart GG) - NSPS limits on NOx and SO2 emissions from stationary gas turbines do not apply because no modification to the source has occurred since October 3, 1977.